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ABSTRACT

Data from the High School and Beyond study--restricted to over 800 regular public school students from a population of 18,684 who completed test batteries in both their sophomore and senior years--are analyzed in this report. Included in the cluster of 12 school variables are school policies, school resources, and school practices. The student-body characteristics cluster includes the home background and individual characteristics such as the Socioeconomic Status (SES) index along with five psychological measures and a quantity-of-instruction variable. Outcomes examined are from three major skill areas (verbal, mathematics, and science), along with a test composite measure. Statistical analyses reveal that the variable contributing most strongly to senior achievement is the sophomore test performance. The student-body characteristics exhibiting a strong positive relationship with the test composite are socioeconomic status, locus of control, quantity of instruction, and parent involvement. Concluding the paper are 28 references, 4 data tables, and an appendix describing the selected variables. (MLF)

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AN INVESTIGATION OF THE FACTORS ASSOCIATED WITH EFFECTIVE PUBLIC HIGH SCHOOLS

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An Investigation of the Factors Associated

With Effective Public High Schools

Introduction

The problems and deficiencies of the public schools are well known or at least oft-discussed (see, for example, Adler, 1982; Boyer, 1983; Education Commission of the States, 1983; Goodlad, 1984; National Commission on Excellence in Education, 1983a; Sizer, 1984). We have been described as a nation at risk because students who graduate from high school do not have the knowledge, ability, and motivation to help this nation maintain a competitive edge.

Comparisons with Japan and certain Asian countries seem to underscore the seriousness of the problem. Stevenson, Stigler, Lee and Kitamura (1978), for example, report that U. S. students fall further behind Asian students the longer they are in school. Walberg (1981; see also Harnisch and Sato, 1983; Harnisch, Walberg, Tsai, Sato, and Fyans, In press; & Walberg, 1983), has noted that by the fifth grade, the worst Asian classes exceed the best American classes. Results from target population of high school juniors from Japan and Illinois on a mathematics achievement test revealed that the average Japanese student outranked about 98% of the Illinois sample. These results are more dismaying than the international comparisons in the National Commission on Excellence (1983b) report based respectively on science and mathematics data of about one or two decades ago (Combes & Keeves, 1973; Husen, 1967).

The national concern for the effectiveness of our schools, particularly our high schools is higher now than at any time since the Sputnik era of the late 1950's. Schools have been described as

ineffective not only because high school graduates score lower on standardized achievement tests than we believe is desirable but also because students fail to develop a long-term desire for learning, an ability to adapt to a changing environment, the capacity to think critically and in-depth about subjects, and the skill to work cooperatively in a complex world-wide society. Thus, high school must not only find means to increase students' achievement scores but also to increase their motivation, their self-discipline and responsibility, and their ability to think in-depth and critically about complex issues.

School as Work Organization

The school may be viewed as a work organization, designed to accomplish certain goals and objectives. As a work organization, we know from the studies of school effectiveness (Brookover, Beamer, Efthim, Hathaway, Lezotte, Miller, Passalacqua, & Tarnatzky, 1982; D'Amico, 1982; Edmonds and Fredericksen, 1978, Madaus, Airasian, & Kellaghan, 1980; Peng, Owings, & Fetters, 1982; & Squires, Huitt, & Segars, 1983) and more recently on school and program excellence (see, e.g., Harms & Yeager 1981; Pennick & Yeager, 1983; Sergiovanni, 1984) that the way schools are organized can have a significant impact on the productivity of the school. Organization of work in the American high school has remained essentially the same for over one hundred years (Sizer, 1984). That is, students are divided into classes of approximately 20-30 per class and meet for 40-60 minutes per subject for 6-8 hour instructional days. Instruction is given in specific content areas, math science, English, etc., with little or no attempt to integrate them.

We know from the studies of school effects (Good, 1979; & Brophy, 1982) that the way schools are internally organized probably has more impact on the school than the input variables (e.g., socioeconomic status

or IQ of the students). The kinds of variables that seem important for studying include instructional leadership in the school, curriculum organization, quality of the teaching staff, organizational and management practices, school climate, and classroom climate. Such organizational variables of this type are often thought to have an impact on the student's development, learning and motivation and are considered in this study.

Peng, Owings, & Fetters (1982) identified school attributes that are associated with cognitive achievement based on the base-year survey of High School and Beyond, a national longitudinal study sponsored by the National Center for Education Statistics (NCES). Their analyses revealed that the number of science and mathematics courses offered, the percentage of students in academic programs, and the number of discipline rules enforced in school are positively and significantly related to student test scores. They further note that schools which have orderly environments and offer an adequate academic curriculum produce higher achieving and better students.

The analysis reported on in this paper attempts to answer questions about the effectiveness of various educational practices and the relevance of various background variables at the school level for public schools only. This study is unlike Peng et al. (1982) in a number of ways. First, only public high schools are examined and secondly, the subjects in our study are the same at both time points and thus the sophomore achievement levels are used as a covariate in the analyses. In this study, we also used the five psychological scales gathered at both times of the investigation. Peng et al. used the scores of the sophomores as proxies when examining the senior achievement level for the base-year survey.

Models of School Effectiveness

It is important to have a model of school effectiveness to investigate the question of whether schools make a difference in student achievement test scores and whether such school variables as curricular programs, discipline rules, school practices, teacher characteristics, and various environments (e.g., social, psychological, and physical) account for the school differences. Early proposals for school effectiveness postulated a three-step process in which actions at the school were designed to provide a favorable school climate, which was to bring about student learning. Figure 1 illustrates the nature of this uni-directional model.

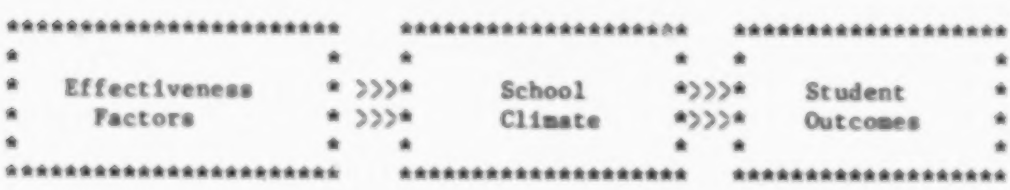

Figure 1. Uni-directional Model of School Effectiveness

More recently the advanced models of school effectiveness have been of an interactive nature (Brookover, et al., 1978; Anderson, 1982; Purkey and Smith, 1983). An example of this model is provided in Figure 2 below with the same three components included.

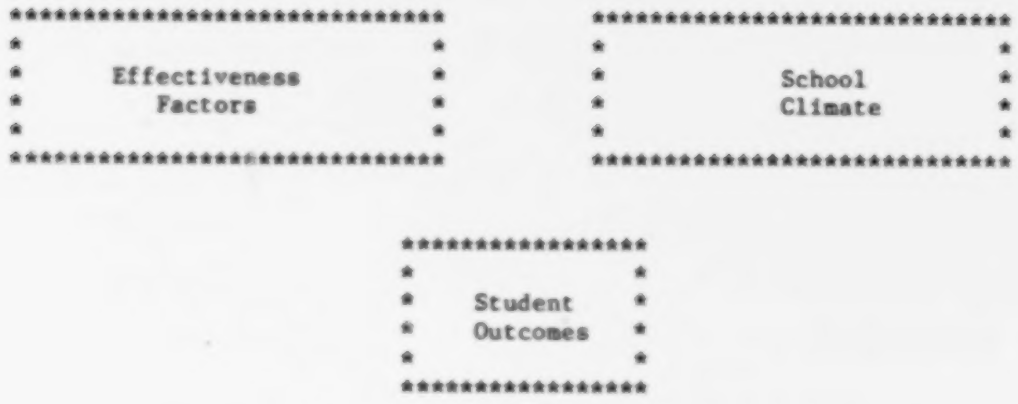

Figure 2. Interactive Model of School Effectiveness

The model of school effectiveness used in this study is extracted from the previous work by Peng et al. (1982). The process of education which brings about student learning is complex. The model consists of interrelated resources and activities which contribute to various educational outcomes. See Figure 3 below for the relationship among the clusters of related variables.

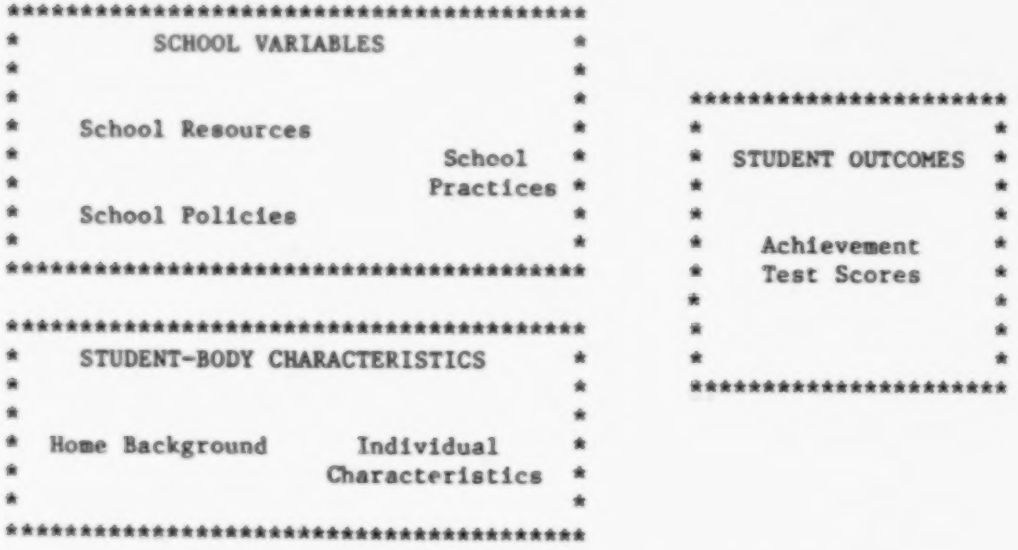

Figure 3. Process of School Education

The above figure represents the relationship among school variables, student-body characteristics and student outcomes. Included in the cluster of school variables are school policies, school resources, and school practices. These variables taken together provide a picture of what a school is trying to provide. The student-body characteristcs cluster includes the home background and individual characteristics such as an SES index along with five psychological measures and a quantity of instruction variable. This latter cluster of variables represents what students bring into the school. Each set of variables will affect student learning and taken together will provide a joint effect.

School policies are set to describe the graduation requirements, standards of student conduct, various administrative procedures, etc. Each school sets its own policies and in many cases these policies reflect the local communities orientation to education. For example, the minimum competency graduation requirement variable is a reflection of a school policy that we have included in this study. Additional variables in this area in future studies could certainly help to better capture the variation in policies among schools.

In this study the school resources included both the quality of the physical facilities as well as an indicator of the quality of the faculty as measured by the percentage of the faculty with advanced degrees. It is often argued that children who attend schools that have high quality resources are given more opportunities for learning advanced topics along with having a more stimulating educational environment. A number of variables have been created to capture this cluster which includes student/teacher ratio, teacher qualifications, school size, quality of school facilities, and the quantity of courses offered by the school.

School practices captures the manner in which school policies are

implemented in the local setting for the children to have the richest educational experiences. For this study the following characteristics were included: type of curriculum, school rules and their level of enforcement, and instructional practices such as ability grouping.

The student-body characteristics are a strong influence on the quality of a school. It is well documented that student-body characteristics such as family background, parental involvement, racial composition , quantity of instruction, and psychological factors all contribute toward student achievement. Each of these characteristics is associated with student achievement and their educational goals.

Student outcomes are the result of being given the opportunity to learn and are measured by achievement test scores. This study examines the outcomes from three major skill areas of the curriculum content that are taught in schools: verbal, mathematics, and science along with a test composite measure.

This study incorporates a set of school variables along with a set of student-body characteristics to describe the schools with students that have high proficiency (verbal, mathematics and science) scores. What is examined is this study is a set of interrelated variables to the educational process.

Schools that have goals other than achievement are not examined in this study. We recognize that with the use of the set of limited outcome measures that this reduces the ability to generalize the school effectiveness findings. In addition, we are aware that some view a standardized test as a poor mechanism to measure the instructional effects of schools. Rowan (1983) has commented that reliance on standardized tests produces measures of school effectiveness which are neither valid or reliable. What is known about the relationship of the

standardized tests to the school is that it is only loosely connected to the curricular content of any individual school.

Validity of HSB Achievement Tests

Willms (1985) has examined the validity of the HSB achievement tests and notes the following (pp. 110-111).

> The average gains on the general achievement tests are extraordinary. We expect students to make only minor gains, if any, on these tests during their last two years of high school. However, the gains on the curriculum-specific tests are also small. This finding is disappointing. One hopes that students would have gained at least one half of a standard deviation per year on these tests if the tests were at all sensitive to the effects of instruction. For example, one expects that on the science test, which has 20 items, the average student would have scored 3 or 4 items higher on the postest after two year of instruction. They did not: The average growth was only three quarters of one item for the two-year period. On the four curriculum-specific tests, the average growth ranges from 6 to 20 percent of a standard deviation per year.
>
> The small amount of growth on each of the HSB tests is even smaller for students with high pretest scores. The average growth per year for students who scored above the mean on the pretest is less than zero for two of the tests (advanced mathematics and science and ranges from 0.05 to 0.54 on the other five tests. Those who scored below the mean on the pretest have somewhat larger growth scores: however, gains for students who did not attend school during the intervention period were about half as large as gains for those who did attend.

Data Base and Variables

The HSB sample is a two-stage stratified cluster sample. In the first stage of the base-year (1980) survey, 1,015 schools were sampled from a total frame of 26,095 schools. The sample included oversampled strata of public alternative schools, private schools, and schools that were over 30 percent black and Hispanic. In the second stage, approximately 36 sophomores in each school were asked to complete an identification booklet and questionnaire and to take a battery of timed cognitive-achievement tests. The first follow-up (1982) study included all 1980 sophomores who were still enrolled in their base-year schools and a stratified subsample of school leavers, including those who dropped out, transferred, or graduated early. These students were asked to

complete a questionnaire and to retake the 1980 test battery. Jones et al. (1983) provides further details of the sample design and the questionnaires.

This study uses data for 18,684 regular public-school students who completed test batteries in both years. Non-public school students, dropouts and early graduates are excluded for this investigation. The analyses used a design weight to account for the stratified structure of the sample.

In spring of 1980, an administrator in each sample school completed a questionnaire about school characteristics and practices. Students completed a questionnaire and a battery of tests. The combination of the student and school survey provides a comprehensive data base for examining the relationship between school characteristics and school outcome measures.

The HSB test battery was developed by Educational Testing Service of Princeton, New Jersey. The test battery included seven tests: three which measured basic academic skills (reading, vocabulary and general mathematics), and the other four which measured skills that are taught during the junior and senior years of high school (advanced mathmatics, writing, science, and civics). For purposes of this analysis, certain tests were combined to yield measures of: verbal skills (vocabulary, reading and writing), mathematics (general and advanced mathematics) and science. The advanced mathematics test measures skills in algebra, geometry, and trigonometry-skills that were not measured on the general mathematics test. The writing test measures writing ability and knowledge of basic grammar. The science test is composed predominantly of items from tests used by the National Assessment of Educational Progress (NAEP). Tests constructed by NAEP are based on domains of

content that represent the academic goals of a representative sample of U.S. high schools.

The main analyses included statistical controls for both prior academic achievement and family background. The controls for prior academic achievement included the sophomore scores on the tests used as the outcome measure (i.e., the pretest) and their respective scores on these same measures during their senior year.

The measures describing the student characteristics and family background included ethnicity, SES composite score, five psychological scales, parental involvement, and others that are described in greater detail in Appendix A. Most of the questions on student characteristics and family background were repeated in the follow-up questionnaire. We used NCES's SES variable, which is a composite of father's occupational prestige score, father's and mother's education, family income, and a scale of eight household items. The variables denoting the percentage of students in the school who were black or Hispanic were derived from questionnaires distributed among the school administrators.

Results & Discussion

To what extent do schools make a difference? The means, standard deviations, and correlation coefficients between predictor and performance variables are given in Table 1. The student-body characteristics exhibiting a strong positive relationship with the test composite are socioeconomic status (.72), locus of control (.70), quantity of instruction (.42), and parent involvement (.40). The student-body characteristics showing a strong negative relationship with the test composite includes the percentage Black or Hispanic (-.56) and community orientation (-.54). The school variables demonstrating a strong positive relationship with the test composite score includes

number of math and science courses offered (.46), number of other courses offered (.38), and percentage of students in academic curriculum (.26), percentage of teachers with advanced degrees (.15), total hours in school year (.15), and school size (.13). The interrelationship of the test scores with a two year intervention ranged from .88 for science to .94 for the test composite.

The results found in Table 1 indicate the predictive power of selected variables with the four performance measures for the sophomore cohort in their senior year. The next question pursued in this investigation is as follows: to what extent are school variables important in determining student outcomes after student-body characteristics have been controlled? A series of multiple regression analyses were performed after controlling for the prior performance measure and then entering the student-body characteristics first and then determining the contribution of the school variables. The same set of analyses were conducted with the school variables entered first followed by the student-body characteristics. The results from these analyses are summarized in Table 2. Eight-six percent of the school variation in senior test scores is explained by prior test performance as sophomores. The addition of student-body characteristics explained an additional 3.6 percent of the variation while school variables added .6 of a percent to the total school variation. The results from entering the school variables first revealed that they contributed an additional 2.7 percent of the differences among the public schools while the student-body characteristics accounted for an additional 1.5 percent of the school variation. The results indicate quite strongly the effect of prior achievement in predicting later achievement over a two year period from the sophomore year to the senior year.

To address the question of what makes a public school different from another with respect to achievement outcomes? A series of multiple regression analyses were run for each of the four performance measures including both the student-body characteristics and the school variables. Standardized regression coefficients, which indicates the relative importance of each variable with other variables in the model, are given in Table 3 for each of the performance measures. The significant student-body characteristics that are useful in predicting school achievement includes socioeconomic status, percent Black or Hispanic, locus of control and the quantity of instruction. The single school variable that contributes to explaining the school variation in achievement is the number of hours in a school year. It is interesting to note that the school policy variable (having a competency requirement) was a positive predictor for verbal, math, and science achievement. Of interest in predicting school achievement in mathematics are the student variables which includes socioeconomic status, work orientation, family orientation and quantity of instruction along with negative contributions from parent involvement and percent Black or Hispanic.

To better understand the relevant variables that explain school variation across both sets of variables we did a stepwise multiple regression analysis for the senior test composite measure. The results forthis analysis are given in Table 4. The variable contributing most strongly to senior achievement is the sophomore test performance. The next set of variables to enter into the regression were socioeconomic status and locus of control. The next set of variables to enter into the model were percent Black or Hispanic and quantity of instruction. The first school variable to enter was the ability grouping variable along with the school size variable one step later. The last student variable

to enter was the community orientation scale. Since no other school or student-body variables added more than .1 of 1 percent of the school variance this completes the estimation of the model using the stepwise procedure.

Conclusion

Schools make a difference. Schools that have larger percentages of students from higher socioeconomic status tend to receive higher test scores. Schools with greater academic emphasis tended to have greater achievement scores. Schools that reported fewer displinary problems showed greater achievement gains. The number of courses that a student took beyond the remedial was positively related to higher senior test scores. The belief that one's success or failure depends on one's own choice (locus of control) was positively related to verbal, science and the test composite performance.

School officials might consider ways in which they could encourage the family to provide a strong role in promoting the value and growth of education in the home. Strengthening the family role in education should be encouraged so that the children of the next generation can understand early that they can influence their future by educational efforts of their own. School officials should note that higher school achievement was related to schools with competency requirements. What is appearing here is the condition that competency requirements encourages young people to take more serious their educational responsibilities and improves their performance as a result. It may well be that the schools with this requirement have a set of educational activities that place greater interest in learning and stress the importance of learning for employment purposes as well as future educational careers. These settings need more careful examination before a clear interpretation can

be made relative to the design of school policies on a minimum competency test as part of the graduation requirement.

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Table 1. Means and standard deviations (SD) of selected variables and correlations between predictor and student performance measures

Predictor Variables	Sample Size	Mean	S.D.	Correlation Coefficient Verbal	Math	Science	Composite
Student-Body Characteristics (Sr)							
Average SES	850	-.18	.40	.70	.70	.60	.72
Parent involvement	861	4.82	1.42	.39	.34	.35	.40
% Black or Hispanic	827	15.89	31.11	-.55	-.50	-.65	-.56
Self-concept	850	-.03	.19	.01	.01	-.02	-.01
Locus of control	850	-.02	.22	.73	.57	.61	.70
Work orientation	850	.00	.18	-.06	-.01	-.11	-.06
Family orientation	850	-.03	.18	.04	.14	.11	.07
Community orientation	850	.04	.24	-.57	-.50	-.50	-.54
Quantity of instruction	849	35.83	2.73	.41	.42	.35	.42
School Variables							
Competency requirement	858	.18	.46	.06	.02	.04	.05
School size	808	400.69	468.62	.12	.15	.02	.13
Quality of facilities	868	10.53	3.50	.01	-.02	-.01	.00
Student/teacher ratio	676	13.09	5.97	-.03	.01	-.03	-.01
Teacher turnover rate	853	8.99	7.38	-.11	-.12	-.02	-.11

% teachers MA, MS, PhD	843	38.75	24.28	.14	.12	.05	.15
No. math science courses	868	5.13	.94	.47	.42	.42	.46
No. other courses	868	7.62	2.55	.38	.41	.28	.38
Total hours in school yr	851	1036.09	140.58	.17	.16	.16	.15
Discipline rules	868	2.35	.69	-.10	-.06	-.05	-.08
% students in acad curr	800	32.39	25.28	.25	.25	.17	.26
Ability grouping	868	.50	.48	-.02	.02	-.01	.00
Student Performance (So)							
Verbal skills	820	49.78	4.39	.92	.83	.83	.92
Mathematics	830	49.74	4.39	.83	.90	.78	.88
Science	828	50.26	5.25	.85	.79	.88	.86
Test composite	832	49.69	4.48	.91	.88	.85	.94
Student Performance (Sr)							
Verbal skills	845	50.10	4.37	1.00			
Mathematics	846	50.01	4.44	.86	1.00		
Science	847	50.55	5.02	.88	.84	1.00	
Test Composite	848	49.97	4.52	.98	.92	.90	1.00

Note: Correlation coefficients LT -.07 and GT .07 are significant at the .05 level.

Table 2. Summary of multiple regression analyses predicting the four senior performance measures

Variable(s) entered into Regression Equation	Proportion of variance Explained				Increase in Variance Explained (% points)			
	Verbal	Math	Science	Composite	Verbal	Math	Science	Composite
Sophomore test	.836	.794	.766	.862	83.6	79.4	76.6	86.2
Student-body characteristics	.876	.838	.805	.898	4.0*	4.4*	3.9*	3.6*
School variables	.883	.843	.809	.904	.7*	.5*	.4*	.6*
Sophomore test	.836	.794	.766	.862	83.6	79.4	76.6	86.2
School variables	.867	.817	.793	.889	3.1*	2.3*	2.7*	2.7*
Student-body characteristics	.883	.843	.809	.904	1.6*	2.6*	1.6*	1.5*

* Indicates that the increase in explained variance is statistically significant at the .05 probability level.

Table 3. Standardized multiple regression coefficients for the 1980 sophomore cohort as seniors on four performance measures

Predictor Variables	Performance Measures			
	Verbal	Math	Science	Composite
Student-Body Characteristics (Sr)				
Average SES	.04*	.15*	-.02	.06*
Parent involvement	-.03	-.05*	.01	-.02
% Black or Hispanic	-.01	-.08*	-.19*	-.06*
Self-concept	-.01	-.01	.00	-.02
Locus of control	.21*	.01	.13*	.14*
Work orientation	.02	.06*	.00	.02
Family orientation	.00	.09*	.09*	.03
Community orientation	-.06*	.00	.07*	.01
Quantity of instruction	.03*	.10*	.10*	.07*
School Variables				
Competency requirement	.03*	.04*	.05*	.02
School size	-.05*	-.03	-.02	-.04
Quality of facilities	.00	.03	-.04	.01
Student/teacher ratio	.01	-.01	.01	.01

Teacher turnover rate	-.01	-.02	.03	-.03
% teachers MA, MS, PhD	.00	-.02	-.01	.00
No. math science courses	.01	-.06*	.00	-.01
No. other courses	.04*	.05*	.03	.01
Total hours in school yr	.10*	.04	-.03	.07*
Discipline rules	-.02	-.01	.01	.01
% students in acad curriculum	.02	.01	.01	.01
Ability grouping	-.03	.00	.01	-.01
Student Performance (So)				
Verbal skills	.67*			
Mathematics		.73*		
Science			.67*	
Test composite				.73*
Proportion variance explained	.88*	.84*	.80*	.90*

* Statistically significant at the .05 probability level.

Table 4. Summary of stepwise multiple regression analysis predicting senior composite test score performance

Variable entered	Proportion of test score variance explained	Increase in variance explained % points
Sophomore composite test	.862	86.2
Socioeconomic status	.871	.9
Locus of Control	.877	.6
Percent Black or Hispanic	.880	.3
Quantity of instruction	.882	.2
Ability grouping	.883	.1
Community orientation	.884	.1
School size	.885	.1

Appendix A

Specification of Variables

The variables used in this investigation are classified into three groups: school variables, student body characteristics, and student outcome measures. The following short description is given for the selected variables included in this study:

A. SCHOOL VARIABLES. These variables were extracted from the school questionnaire file unless stated otherwise.

1. Minimum competency requirements: Whether seniors are required to pass a minimum competency (proficiency) test in order to receive a High School Diploma. Presence of the requirement is indicated by a value of 1 and with a value of zero if otherwise.

2. School size: Total number of students in grade 10 and 12.

3. Quality of facilities: Each of the following facilities, if present, contributed one point to a composite index of the quality of a school's facilities: indoor lounge for students, career information center, occupational training center, media production facilities, remedial reading center, Departmental offices, Teaching resources center for teachers, child or nursery care facilities, and student cafeteria.

4. Student/staff ratio: The ratio of the total school enrollment to the total number (or full-time equivalent) of school personnel, including student teachers, volunteers, security guards, etc.

5. Percent of teachers with advanced degrees: Percentage of the full-time high school teachers who have Master's or Doctor's degrees.

6. Teacher turn-over rate: The percentage of full-time high school teachers in a school at the end of the 1978-1979 school year who had

since left for reasons other than death or retirement.

7. Number of mathematics and science courses: Total number of the following courses offered by the school: second year algebra, calculus, chemistry, geometry, physics, trigonometry.

8. Number of other courses: The total number of the following courses offered in the school: Auto mechanics, drama, driver training, economics, ethnic or black studies, family life or sex education, third year Spanish, third year German, third year French, home economics, psychology, Russian, wood or machine shop.

9. Time of schooling: This was measured by the product of the following elements: number of days in a school year, duration of a standard class period (in hours), and the number of standard class periods the average student has each day.

10. Academic curriculum: The percentage of 12th grade students reported by school officials in a college preparatory (academic) program.

11. Discipline rules: Number of rules, from the following three, which are enforced in a school. (1) students responsible for property damage, (2) no smoking rules, and (3) rules about student dress. Scores range from zero to 3.

12. Ability grouping: Whether a school used homogeneous ability grouping for either the 10th or the 12th grade English classes. A value of 1 means that homogeneous groupoing was used, and 0, that it was not.

B. STUDENT BODY CHARACTERISTICS

1. Socioeconomic status (SES): The SES index computed from each student's questionnaire survey is a composite of five equally-weighted standardized components: father's education, mother's education, parental

income, father's occupation and a household items index. The SES index can have any value between approximately -3 to +3. Mean value is zero.

2. Parental involvement: A measure of parental involvement in their children's schooling was calculated from responses to certain items in the school questionnaire. The question asked: To what extent is each of these matters a problem in your high school? (a) Parents' lack of interest in school matters, and (b) Parents' lack of interest in students' progress. Each of these items had four response options ranging from "serious" (scored a value of 1) to "not at all" (scored 4). Responses to these two items were summed to yield a measure of parental involvement in each school. A high score indicates a high level of parental involvement.

3. Percent black or Hispanic students: Percentage of students who are members of Black or Hispanic origin, as reported by school administrators.

4. Quantity of Instruction: The number of courses completed in academic subjects (mathematics, English, French, German, Spanish, history, social studies, and science.)

5. Psychological scales: Five psychological composite scales were standardized separately (using the appropriate weight) and prepared for research use on the HSB tape. The following scales were used in the study with the respective items for each scale identified.

Locus of control composite scale score. (1) Good luck is more important than hard work for success. Strongly agree / agree / disagree / strongly disagree. (2) Every time I try To get Ahead, something or somebody stops me. (3) Planning only makes a person unhappy, since plans hardly ever work out anyway. (4) People who accept their condition in life are happier than those who try to change things.

Community orientation composite scale score. How important is each of the following to you in your life: (1) being a leader in my community, (2) being able to give my children better opportunities than I've had, (3) working to correct social and economic inequalities.

Family orientation composite scale score. How important is each of the following to you in your life: (1) finding the right person to marry and having a happy family life, (2) living close to parents and relatives, (3) getting away from this area of the country.

Work orientation composite scale score. How important is each of the following to you in your life: (1) being successful in my line of work, (2) having lots of money, (3) being able to find steady work.

Self-concept composite scale score. (1) I take a positive attitude toward myself. (2) I feel I am a person of worth, on an equal plane with others. (3) I am able to do things as well as most other people. (4) On the whole, I am satisfied with myself.

C. STUDENT PERFORMANCE

1. Composite Test Score: The average of standardized scores made by each student on the following tests: reading, vocabulary and mathematics. The mean of the standard scores was set at 50 and the standard deviation at 10.

2. Mathematics Test Score: The average of the standardized scores on the two mathematics subtests.

3. Verbal Ability: The average of the vocabulary, reading and writing standardized scores.

4. Science Score: The standardized score on the science assessment items.